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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09 729,069 | 12 04 2000 | Nicolas Nagel | GR 99 P 5374 | 6450 |

7890

05 20 2003

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EXAMINER

VU, DAVID

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 05 20 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/729,069

Applicant(s)

NAGEL ET AL.

Examiner

DAVID VU

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,10,12 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,10,12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or onsale in this country, more than one year prior to the date of application for patent in the United States;

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1- 4 and 10-16 are rejected under 3 5 U.S. C. 102(b) as being anticipated by Nishioka et al. (US 5,811,851).

In re claims 1-2, 4, 10, 12 and 14-16, Nishioka et al., in related text (Col. 5, Line. 30-Col. 9, Line. 37) and figures (Figs. 7-8) disclose a microelectronic structure, comprising: a base substrate 30 at least partly composed of an insulating material 32 and formed with an opening; opening completely penetrating through insulating material 32; at least one conductive material 34 filling opening; at least one barrier layer 48 provided over base substrate 30, barrier layer including an oxygen-containing iridium layer 48 and an oxygen barrier layer 48, oxygen barrier layer being composed of one of iridium dioxide and ruthenium dioxide 48; an adhesion layer 46 disposed between base substrate 30 and at least one barrier layer 48, adhesion layer 46 containing at least one material selected from the group consisting of tantalum nitride, titanium

nitride, tantalum silicide nitride and tungsten silicide (See Tables 7-8 and Col. 9, Lines 20-37); a noble metal layer 38 disposed on barrier layer 48; and a metal oxide-containing layer 42 disposed on a noble metal layer 38; a metal silicide layer 46 disposed on base substrate 30 directly between adhesive layer 46 and opening, causing a layer stack of silicide layer 46, adhesive layer 46 and oxygen-containing barrier layer 48 to be formed above opening.

2. Claims 1- 4 and 10-16 are rejected under 35 U.S. C. 102(e) as being anticipated by Horii (US 2001/0052466).

In re claims 1-2, 4, 10, 12 and 14-16, Horii, in related text (Col. 5, Line. 30-Col. 9, Line. 37) and figures (Figs. 7-8) disclose a microelectronic structure, comprising: a base substrate 10 at least partly composed of an insulating material 12 and formed with an opening; opening completely penetrating through insulating material 12; at least one conductive material 14 filling opening; at least one barrier layer 22 provided over base substrate 10, barrier layer 22 including an oxygen-containing iridium layer 22 and an oxygen barrier layer 22, oxygen barrier layer 22 being composed of one of iridium dioxide and ruthenium dioxide 22; an adhesion layer 20 disposed between base substrate 10 and at least one barrier layer 22, adhesion layer 20 containing at least one material selected from the group consisting of tantalum nitride, titanium nitride, titanium silicide nitride and tungsten silicide (See Tables 7-8 and Col. 9, Lines 20-37); a noble metal layer 40 disposed on barrier layer 22; and a metal oxide-containing layer 60 disposed on a noble metal layer 40; a metal silicide layer 20 disposed on base substrate 30 directly between adhesive layer 20 and opening, causing a layer stack of silicide layer 20, adhesive layer 20 and oxygen-containing barrier layer 22 to be formed above opening.

3. Claims 1-2, 4, 10, 12 and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Asano et al. (US 6,407,422).

In re claims 1-2, 4, 10, 12 and 14-16, Asano et al., in related text (Col. 5, Line. 29-Col. 6, Line. 30; col. 8, Lines 18-30, 46-59) and figure (Fig. 1) disclose a microelectronic structure, comprising: a base substrate 11 at least partly composed of an insulating material 13 and formed with an opening; opening completely penetrating through insulating material 13; at least one conductive material 14 filling opening; at least one barrier layer 52 provided over base substrate 11, barrier layer including an oxygen-containing iridium layer 52 and an oxygen barrier layer 52, oxygen barrier layer being composed of one of iridium dioxide and ruthenium dioxide 52; an adhesion layer 51 disposed between base substrate 11 and at least one barrier layer 52, adhesion layer 51 containing at least one material selected from the group consisting of V, Hf, Ir, Ce, Zr, Cr; a noble metal layer 52 disposed on barrier layer 48; and a metal oxide-containing layer 52 disposed on a noble metal layer 52; a metal silicide layer 53 disposed on base substrate 11 directly between adhesive layer 51 and opening, causing a layer stack of silicide layer 53, adhesive layer 51 and oxygen-containing barrier layer 52 to be formed above opening.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the

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examiner should be directed to David Vu whose telephone number is (703) 305-0391. The

examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms, can be reached on (703) 308-4910.

DV

David Vu


David Nelms
Supervisory Patent Examiner
Technology Center 2800